

INWG #48

NIC 21596

4170

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A PACKET FORMAT PROPOSAL

Following the INWG working meeting in Hawaii, L. Pouzin, V. Cerf, and C. Sunshine reviewed INWG Note #42, and a particularized version of the packet format was developed, based on work done earlier in September. The result is attached and is proposed as the basis for the 1974-75 experiments in inter-networking. The format will accommodate both the protocol proposals in INWG 39 and in INWG 43. Unless there are some strong and cogent objections to this format (by the end of February 1974), I hereby recommend that it be adopted for our experiments over the near term. Note that adoption at this time does not commit anyone to a "standard" except for the duration of our early experiments.

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SCH 515

RESEAU CYCLADES

Oct. 1973

revised: Jan. 1974

DRAFT FOR COMMENTS

IDENTIFICATION

EXPERIMENTAL COMMUNICATION PROTOCOL. BASIC MESSAGE FRAME.

L. POUZIN

FORWARD

End to end communication protocols have been discussed at an INWG meeting in Brighton on 15 September 1973. Another meeting took place at NPL on 19 September 1973, in which participants were: V. Cerf, D. Davies, L. Pouzin, R. Scantlebury, P. Wilkinson. This note contains some of the conclusions reached at this last meeting.

1 - BASIC COMMUNICATIONS

As a stepping stone for building specific higher level protocols, there is a need for a very straightforward message transfer protocol. It is based on the following assumptions:

- . Messages received are copies of messages sent. Every single message is delivered as a single piece, not in fragments. (Provision is made for fragmentation experiments, however).
- . Messages may be delivered out of order.
- . Only core to core format is specified. Synchro, transparency, and checksum bits are dependent upon local network interface.

This basic protocol is not intended to be used as such. It is no more than a shell providing a standard way of getting information through an arbitrary medium capable of switching complete messages. Typically it should act as a carrier for any kind of end to end protocol resulting from user acceptance.

2 - MESSAGE FRAME

SOURCE ADDRESS	24 BITS
DESTINATION ADDRESS	24
SPARE	24
TEXT LENGTH (OCTETS)	16 (MAX. 65,525)
TEXT	0-524,200

This whole message may have to be carried as text within some network which would wrap it into its local format. Consequently, the total length may not exceed 65,536 octets. Since the header is 11 octets long, the text length may not exceed 65,525 octets.

3. MESSAGE PROTOCOL

In order to build a reliable data transmission scheme, some protocol is needed to control the message flow. This is left for further study.

An experimental protocol based on (1) will be worked out. It allows fragmentation in GATEWAYS, with reassembly at the final destination.

4. REVISED FORMAT

There was not enough time during the September 19 meeting to coin a format along lines suitable for an international standard. Having now completed a proposal for a trans-network message format (2), it is possible to suggest a revised lay out, without interfering with the principles agreed upon. The format below particularizes the general format proposed in (2) and would be used for initial experiments.

USED BY LOCAL NETWORK	2	Bits	XX	
HEADER TYPE	2		11	EXPERIMENTAL
HEADER LENGTH (-8)	4		010	13 OCTETS
TEXT LENGTH	16			-----MAX. 242*
LOCAL NETWORK CONTROL	3		XXX	
ECHO	1		0	1 = ECHO
RESERVED	12		-----	
MESSAGE IDENTIFICATION	16		-----	
DESTIN FORMAT	4		0001	<div style="display: inline-block; vertical-align: middle;"> <div style="display: inline-block; vertical-align: middle;">{</div> <div style="display: inline-block; vertical-align: middle;"> 1010 ARPANET 1011 ULICS 1100 CYCLADES 1101 NPL </div> </div>
.. ADDRESS	4		-----	
SOURCE FORMAT	4		0001	
.. ADDRESS	4		---	
LOCAL DESTIN ADDRESS	16		-----	ARPA HOST
.. SOURCE ..	16		-----	CYCLADES STAT.

This format does not contain any more information than the original one, (except for the echo). But using it would simultaneously allow another experiment, viz. switch both local and foreign messages without reformatting headers. The idea is to assess the proposed international format in view of a possible network standardization. Figure 1 gives an alternative presentation of the proposed format.

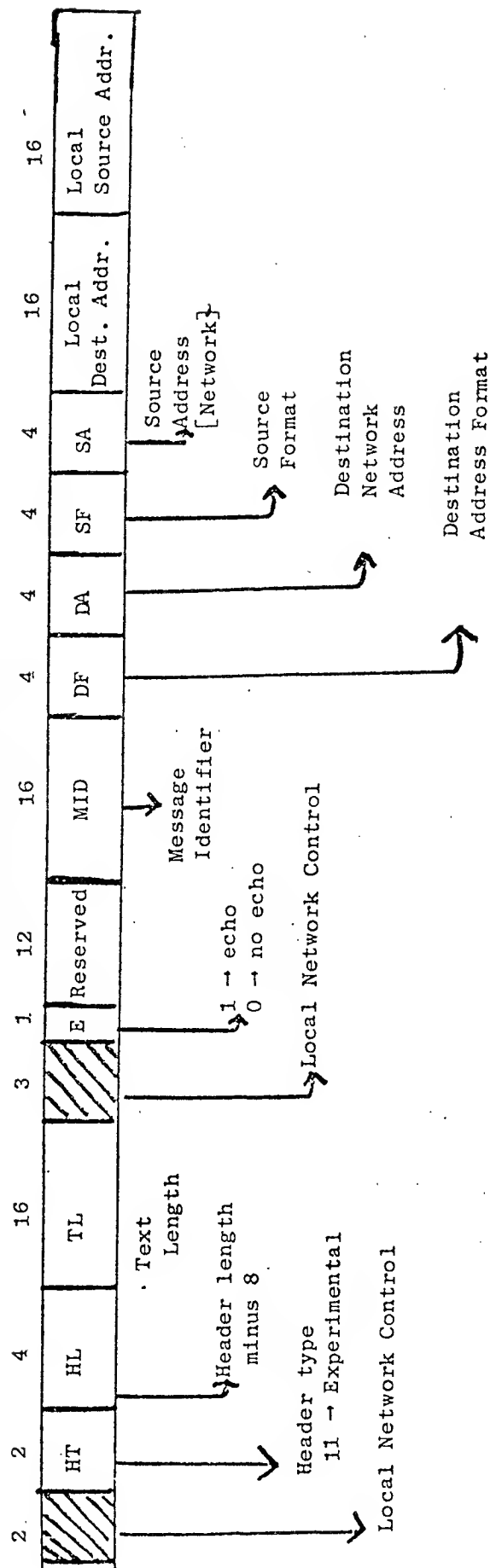
Comments would be welcomed.

5. REFERENCES

1. Cerf V., Kahn, R. - Towards Protocols for Internetwork Communication. NIC 18764, (SEP 73), 34 p. (INWG 39)
2. Pouzin, L. - Inter-Connection of Packet Switching Networks. Reseau Cyclades, SCH 513, (Oct. 73), 19 p (INWG 42)

* Initially we agreed to limit message text to 242 octets plus 13 octets of header, however, we do not rule out fragmentation experiments with larger message lengths.

REVISED HEADER FORMAT



Example:

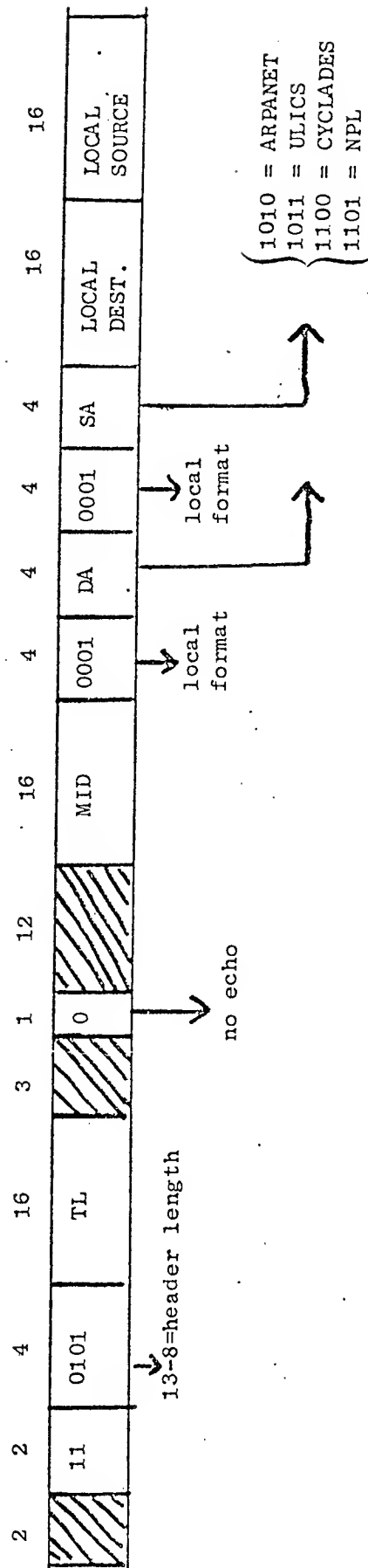


Figure 1